

Remarks

The specification has been amended, as suggested by the Examiner, to update the status of the parent application and to correct the reference numeral designation of two structural components. The Abstract of the Disclosure has been amended in accordance with the Examiner's suggestion.

Claims 1 and 7 have been amended to direct them more specifically to the subject matter that applicant regards as his invention; claim 4 has been amended in accordance with the Examiner's suggestion; and new dependent claims 11 and 12 have been added.

Claims 1, 2, and 7 stand rejected under 35 U.S.C. 102(b) as being clearly anticipated by Fitzgerald et al. Dependent claim 4 stands rejected under 35 U.S.C. 103 as being unpatentable over Fitzgerald et al. in view of Smith et al. Dependent claims 3 and 8 stand rejected under 35 U.S.C. 103 as being unpatentable over Fitzgerald et al. as applied in the rejection of claims 1 and 7, and further in view of Williams et al. These rejections are respectfully traversed, particularly with respect to claims 1-4 and 7-10, as amended. Independent claim 1 is specifically directed to "A transducer for use in a viscoelastic analyzer of the type in which a mechanical probe member is immersed in a fluid or gel whose viscoelastic characteristics are to be determined, the probe member being driven to impart a desired oscillating motion thereto, the improvement comprising means for restricting motion of the probe member, during both periods of operation and inoperation of the viscoelastic analyzer, in the direction of the desired oscillating motion, to a region that protects the probe member from excessive displacement, and for

also restricting motion of the probe member, during both periods of operation and inoperation of the viscoelastic analyzer, in any direction except the direction of the desired oscillating motion." Independent claim 7 is similarly directed to "A transducer...comprising stop means for limiting motion of the probe member, both during periods of operation and inoperation of the viscoelastic analyzer, in the direction of the desired oscillating motion." These very important features of applicant's claimed invention provide a transducer for viscoelastic measurement that is able to withstand the non-operational forces to which it is subjected by the human handling that occurs between each measurement, not simply the controlled operational forces associated with normal transducer oscillation. These claimed features are not shown or suggested by any of the cited references, taken alone or in any combination.

Unlike applicant's specifically claimed transducer for viscoelastic measurement, Fitzgerald et al. is directed to a viscosity transducer. Viscosity transducers require only small displacements in the course of viscosity measurements. Thus, they can be constructed to be substantially rigid to withstand the mechanical stresses associated with normal use. This is totally unlike the viscoelastic transducers of the type claimed by applicant, in which the compliance of the transducer is selected to approximately match the compliance of a test material, such as blood, thus rendering these transducers much more susceptible to mechanical damage during handling.

In the embodiments of the viscosity measuring transducer taught by

Fitzgerald et al., either the oscillating component requires isolation plate 9 to be compliant relative to vibratory bar 15 or vice versa. In the case in which isolation plate 9 is highly compliant, there is absolutely no structure to prevent immersion sensor 12, if forced laterally, vertically, or torsionally sufficiently hard, from damaging isolation plate 9. Fitzgerald et al. also describes the use of an isolation plate that is corrugated or ribbed to allow vibratory motion in the desired direction (parallel to the blade major surface) while resisting movement in the direction perpendicular thereto. This approach provides only partial restriction of motion. In all of the illustrated embodiments taught by Fitzgerald et al., gross deformation of and permanent damage to isolation plate 9 would occur before vibratory bar 15 meets base 13. Nothing in the Fitzgerald et al. reference suggests base 13 as being a mechanical stop, and there is no structure taught in that reference that would prevent unintended vertical motion from damaging the transducer. The need for preventing such damaging motion, to which applicant's invention is specifically directed, is likely never encountered in the applications for which the viscosity measuring transducer of Fitzgerald et al. is intended.

In an alternative embodiment described by Fitzgerald et al., member 15 is compliant and is completely exposed. The reliability of this design is entirely dependent on eliminating any potentially large forces on member 15. Figure 2C of Fitzgerald et al. illustrates reflector blades 35 and 35' that are intended to eliminate shear waves and consequently improve transducer accuracy. These blades are not intended to, and, in fact, do not improve the durability of the transducer. Again, this is in contrast to applicant's



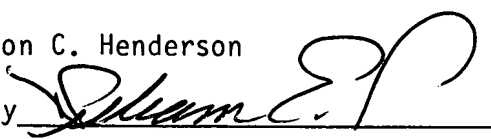
specifically claimed viscoelastic transducer, in which movement of the probe member, both during periods of operation and inoperation of the viscoelastic analyzer, is restricted in all directions, except the direction of the desired oscillating motion, and in which movement of the probe member, both during periods of operation and inoperation of the viscoelastic analyzer, in the direction of the desired oscillating motion, is limited to a relatively small safe operating range.

In view of the foregoing amendments and remarks, it is believed that applicant's claims 1-4, 7-10, as amended, as well as new dependent claims 11 and 12, are all patentable over the references of record, taken alone or in any combination, and that this application is now in condition for allowance. Favorable action is accordingly solicited. Nevertheless, should any issues remain following consideration of the foregoing amendment, it is respectfully requested that the Examiner telephone applicant's undersigned attorney to discuss those issues before issuing a further action.

Respectfully submitted,

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